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# **Efficient Electrochemiluminescence from Ru(bpy)<sub>3</sub><sup>2+</sup> Enhanced by Three-Layer Porous Fe<sub>3</sub>O<sub>4</sub>@SnO<sub>2</sub>@Au Nanoparticles for Label-Free and Sensitive Bioanalysis**

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## **Research highlights**

- ▶ The three-layer porous Fe<sub>3</sub>O<sub>4</sub>@SnO<sub>2</sub>@Au NPs was prepared not only as matrix with enlarge specific surface area but also as a novel co-reagent of Ru(bpy)<sub>3</sub><sup>2+</sup>.
- ▶ A label-free and sensitive detection method was proposed in order to overcome existing problems in sandwich-type assay.
- ▶ The simple and sensitive “signal-on” aptasensor displayed a wide linear range response for TB with a low detection limit.

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